

# Garageband, Audacity, and Aviary, Oh My!

## Technology-Based Composing Demystified



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### Tech-Based Composing:

**Authentic Creative Expression:** “[M]usic teachers, using a certain methodology and technology tools, can draw out authentic musical creativity from students of all levels of experience and, in the process, deliver meaningful music education” (Watson, 2011, p. 12).

**Enabling Musical Thinking:** “Good compositional software should enable students to generate motivic material, set it into context, and manipulate it within that context, with the capacity to think about and envision the whole as well as the details” (Wiggins, 2009, p. 114).

**Seemingly Unlimited Choices:** “Teachers must help students explore the world of music and create their own music while guarding against tasks and activities that may overwhelm their newly emerging capacities” (Carter, 2013, p. 225).

### Developing Compositional Experiences:

Based upon current music education resources (Carter, 2013; Dammers, 2013; Watson, 2011) and personal experiences, here is a suggested process for crafting an effective tech-based compositional experience:

- 1) Identify the learning target(s).
- 2) Identify the skills and needs of your students.
- 3) Define specific learning outcomes.
- 4) Identify the appropriate technologies that will enable and empower students.
- 5) Teach the introductory activities related to the target.
- 6) Develop and display a model of the finished project.
- 7) Instruct students on the specific tech operations necessary to produce the outcomes.
- 8) As students create, coach students with crafting and revising their work (focus on composing, not the tech).

#### Selecting Appropriate Tech:

When selecting a piece of technology for a compositional experience, ask yourself the following questions to help guide your selection of appropriate applications or hardware for the given project:

Does this tech allow/encourage my students to:

- think in sound?
- think creatively?
- organize their ideas?
- interact with the dimension/element of music?
- interact with new sounds/timbres?

Other questions to ask yourself:

- Does this tech lend itself to independent or collaborative composing?
- Does this tech allow for saving/publishing the material or will I need to seek out other means?

### How do I use this app again?:

**LISTEN**

**PLAY**

**GOOGLE IT**

In the end, don't get hung up on the ins and outs of one specific app because there will always be a new and easier app to use. Apps come and go, so spend your time developing your pedagogy and then find an app.

## **Independent Use or Sharing of Tech:**

**1:1 Ratio of tech to student:** Optimal for independent growth and creative thinking, however, somewhat unrealistic with regards to availability of tech.

**Sharing:** A much more likely ratio is 1:5+. If so, here are some ideas:

- Large Ensembles: Allow for small groups to work at a composing center so that students can work more directly with tech.
- Smaller Classes: When collaboration is necessary for a project, assign roles for students to take on. These roles can shift from student to students so that all are engaged and feel included when using a piece of technology. For example, when composing a song on Garageband iOS with 5 students using one iPad, here some ideas for student roles:
  - Engineer: In charge of recording the work (or pushing record/stop). Also could be in charge of trouble-shooting.
  - Producer: Mixes the audio level to create balance and arranges the order of the song's sections.
  - Performer(s): The students(s) that are actually performing at any given moment and making the greatest use of the tech.
  - Conductor: Helps keep the beat and remind performers of melodic/harmonic/rhythmic ideas.
  - Studio Manager/Runner: Takes care of organization details and helps others to fulfill their roles.

## **Publishing/Assessing:**

### Live Performance/Electronic Performance:

- Class performance is important and takes time. However, the performance and peer discussion can enlighten teacher as to composer intent and technique.
- *Critical Response Process* (Lerman & Borstel, 2003).

### Digital Publication/Online Portfolio:

Here are some suggested ways to create and manage online portfolios:

- **YouTube.com:** Educators can limit viewers and approve comments.
- **Soundcloud.com:** Students or classes can create online archives to share.
- **Evernote:** An app that has a cloud-based component. Teachers can easily control who views it.
- **Wikispaces.com:** Teachers can create collaborative websites and control viewing/commenting abilities.
- **Googlesites.com:** Similar to wikispaces, however, students can store all their works via google drive and publish only the works they choose on class websites.

## Tech-Based Compositions:

### **Samplers: Creating Your Own Sonic Palette**

Sampling software can allow for a great amount of creative exploration of all varieties of sound sources in a way that students can directly tinker with sounds to create new and interesting timbres to add to their compositional palette.

#### **Example Lesson: Found Sound ABA Composition**

**Grade Level:** K-3

#### **Learning Targets:**

- Identify, classify, and explore various sound sources.
- Compose a short piece with specified guidelines demonstrating how textures can create unity and variety.
- Use a variety of traditional and nontraditional sound sources and electronic media when composing and arranging.

#### **Skills Needed:**

- Ability to identify, describe, and classify sound sources.
- Understanding of form (same/different sections).
- Basic understanding of how to create unity and variety through use of sound sources.

#### **Learning Outcomes:**

- Students will classify found sounds into timbre groups.
- Students will record and manipulate found sounds to create new timbres.
- Students will create an ABA composition using digitally manipulated found sounds.
- Students will describe and evaluate how the A and B sections of their compositions display unity and variety.

#### **Process:**

- 1) Students listen to and discuss music with non-traditional sound sources (STOMP, YouTube "Car Music," "Typewriter" by L. Anderson, "Sonata V" by J. Cage, "One Pig" by M. Herbert, etc.).
- 2) Students go on a "sound hunt" discovering non-traditional sounds from around the room and writing them down on a "Found Sound Log" (name of sound and description of timbre).
- 3) Students categorize all class sounds into timbre families.
- 4) Teacher displays an example finished project and introduces basics of using the chosen sampler program.
- 5) Using sampler apps, students record 2-3 sounds from each timbre family.
- 6) Teacher displays example project again, drawing attention to the form and use of unity and variety in creating textures.
- 7) Students create an ABA composition using sound sources and textures to create unity and variety in their works.

<b>Suggested Sampler Apps:</b>	
Garageband: iOS, \$4.99	Singing Fingers: iOS, FREE
Binary Bleeps Sampler: iOS, \$1.99	Tumbjam: iOS, \$8.99
Audio Sampler 1.0: Windows, FREE	SPC Music Sketchpad 2: Android, \$4.99
Nanoloo: Android, \$2.00	

**Matrix Sequencers: Minimize the Work to Maximize the Effect**

Matrix Sequencer empowers anyone to create intricate rhythm and melodic loops. Many of the newer (and more costly) matrix sequencing apps allow users to create complicated textures of loops and even arrange looped patterns into song forms.

**Example Lesson:** My Minimalist Piece

**Grade Level:** 2-5

**Learning Target:**

- Compose a looped pattern and slowly vary the pattern to create a Minimalist work.
- Display an awareness of how balance is created in music using sound/silence and unity/variety through loop creation.
- Understand the concepts of beginning, middle, and end in musical works.

**Skills Needed:**

- Some familiarity with Minimalism.

**Learning Outcomes:**

- Students will have create a unique and looped pattern that has a balance of sound/silence, unity/variety and varies slowly over a period of time (about 2-3 minutes).
- Students will develop an overall plan for their work that details how the work will begin, what will happen in the middle, and how it will end.

**Process:**

- 1) Students will be introduced to the Minimalist music of Reich, Glass, Adams, and Amacher as well as modern Electronica/Trace music. Teacher will draw students' attention to the low rate of change and hypnotizing effect of the repeating music.
- 2) Teacher will build a looped pattern using a matrix sequencer and display how to slowly vary the music.
- 3) Students will create a one layer looped pattern. They will share their work with a partner for feedback regarding the balance of sound and silence. Both students will assist each other in editing/revising their patterns.
- 4) Students will combine their patterns and revise their work to fit together.
- 5) Students will take screenshots of their patterns as a way to preserve their work. Then, both will explore how to collaboratively vary their patterns over a 2-3 minute period. Students may find it useful to jot down notes as to the overall order of their variations.
- 6) Students will record their work.
- 7) EXTENSION: Students can map out their overall work in some visual or descriptive manner to be displayed with their work. This may come in the form of an iMovie or animation to accompany the recorded work. Also, students could be challenged to translate their patterns into standard notation and arrange their work for performance on traditional instruments.

<b>Matrix Sequencers:</b>	
moxMatrix: iOS, \$4.99	grüvtron: iOS, \$0.99
SoundGrid: iOS, \$2.99	PixiTracker: iOS and Android, \$1.99
PatternMusic: iOS, FREE	Beatwave: iOS, FREE
Wavebot: iOS, \$0.99	ToneCraft: Web, FREE
ToneMatrix: Chrome, FREE	Beatlab: Chrome, FREE
GroveMixer - Music Beat Maker: Android, FREE	

**Loop-Based Sequencers: Building Something New from Something Old**

Using loops to compose can be a highly creative and rewarding endeavor for students of any age.

**Example Lesson:** Creating a Hip-Hop Beat

**Grade Level:** 5-12

**Learning Targets:**

- Understand how hip-hop beat producers create the musical accompaniment to rap lyrics.
- Describe characteristics of hip-hop music and culture.
- Explore how multiple musical patterns combine to create tension and release.

**Skills Needed:**

- Some experience listening to hip-hop music.
- Experience with listening to and composing music displaying tension and release.

**Learning Outcomes:**

- Students will compose hip-hop beats to accompany original rap lyrics or a piece of poetry highlighting the tension and release (climax and resolution) of the text.
- Students will be able to describe how hip-hop songs are crafted.
- Students will be able to distinguish, identify, and/or describe some loops used in hip-hop songs.

**Process:**

- 1) Students will bring in examples or clips of popular hip-hop songs for whole class listening. Class will discuss their prior knowledge of how hip-hop songs are crafted, specifically the idea of beat creation.
- 2) Teacher will assist students will deconstructing beats from songs to hear the individual loops that comprise them.
- 3) Based on class discussion, students will create a list of things that make up a good beat. This list will be used as the guiding parameters for their composition.
- 4) Students will be assigned to create their own rap lyrics or select a poem to create a beat for. Teacher will guide students to discover the climax of the lyrics or poem and identify how the work sets up and resolves tension.
- 5) Teacher will bring in an example beat and lyric to play/perform for students. Teacher will then deconstruct their own beat to model creative process they followed, specifically highlighting the ways that tension was created and then released.
- 6) Teacher will coach students with using loop-based sequencers, allowing for independent work. Teacher will brainstorm with students how they might set up and release the tension in their piece in a way that correspond with their selected text.
- 7) Students will record their beats and play them live along with a live rapping the selected text.

**Suggested Loop-Based Apps (Along with Any Matrix Sequencer Apps Listed Above):**

Garageband: iOS, \$4.99; Mac, \$14.99	Looptastic: iOS, FREE (upgraded versions are \$9.99 to \$14.99)
Isle of Tune: Web, FREE; iOS, \$1.99	RealBeat: iOS, \$2.99
Loopesque Kids: iOS, \$0.99	Loopesque Lite: iOS, FREE (upgraded version is \$5.99)
Figure by Propellerhead: iOS, \$0.99	Loopy HD: iOD, FREE
Remixer: iOS, FREE	DrumBot Sequencer: Web, FREE
Jamstudio.com: Web, \$3.95 a month subscription	Soundation: Web, FREE (with optional subscriptions)
The MusicLab from ClubCreate: Web, FREE	Hiphop Maker Lite: Android, FREE
Audioid: Android, \$2.99	SPC Music Sketchpad 2: Android, \$4.99
Nanoloop: Android, \$2.00	ReLoop Music Sequencer: Android, \$3.99
Musicshake; Windows, FREE.	

**Digital Audio Workstation (DAW): Recording/Producing Tools for the Masses**

DAWs have “democratized sound recording” (Dammers, 2013, p. 204) as any layman with limited funds can record, mix, and produce their own musical ideas.

**Example Lesson:** This is My/Our Song

**Grade Level:** 5-12

**Learning Targets:**

- Understand and identify the sections of a pop song that uses standard song forms (Verse-Chorus form, 32 bar form, etc.).
- Identify and describe characteristics of pop music genres.
- Compose a musical work with multiple sections that display unity/variety and tension/release.
- Understand the way that chord progressions act as an organizational foundation in pop songs.

**Skills Needed:**

- Ability to distinguish different/same sections of a song.
- Understanding of basic song forms (ABA, ABAB, Rondo, etc.).
- A basic awareness of chord progressions.

**Learning Outcomes:** - Students will collaboratively create a song in a common pop song form.

**Process:**

- 1) Students will listen to songs that make use of common pop song forms and identify the different sections of the work.
- 2) Class will develop working definitions for the terms Intro, Verse, Pre-Chorus, Chorus/Hook, Bridge/Middle 8, and Outro). These definitions will be used to guide their work.
- 3) Teachers will introduce students to the hook of a given song and show them how to look up the chord progression via guitar tab websites. Class will use classroom instruments to create a basic cover performance of the hook.
- 4) Students will create 3-5 member bands. Student bands will select a pop music genre and song/hook and look up the chord progression. Using the chord progression as a starting point, students will practice playing the progression together on their instruments and improvising new melodies.
- 5) Teacher will introduce an example of a finished hook recorded into a DAW. Teacher will then instruct students on how to record (either through ensemble performance or through multi-track recording) their new hooks.
- 6) Students will then create their own Verse and Bridge sections, recording them as they are composed.
- 7) Teacher will demonstrate how to use the application to copy, paste, and organize the recorded sections into common pop song forms. Students will then decide upon the form of their work and revise until it sounds “right” to the group.
- 8) Students will then create Intro and Outro sections for their pieces, using familiar pop songs as inspirations.
- 9) Student bands will create cover art (possibly in collaboration with art teachers) and liner notes that describe the genre, works that inspired their composition, and their composition process.

**REMIX:** Another culturally relevant way to make use of DAWs is for creating a remix of a song. Students import songs that they cut loops/sounds from and combine these with loops from other recordings in order to create something uniquely original. Some artists provide isolated instrumental tracks and hold remix competitions (check out <http://www.remixcomps.com/>).

<b>Digital Audio Workstation (DAW):</b>	
Garageband: iOS, \$4.99; Mac, \$14.99	Overdub: iOS, FREE
Hokusai: iOS, FREE	Dingsaller Lite: iOS, FREE (upgraded version is \$4.99)
ReBirth by Propellerhead: iOS, \$14.99	FL Studio HD: iOS, \$19.99
Tabletop: iOS, FREE (upgraded version is \$29.99)	ACID Music Studio: Windows, starting at \$64.95
Audacity: Mac/Windows, FREE	Ableton Live Intro: Mac/Windows, \$69.99 (full version is \$49.99)
AudioTool: Chrome, FREE	MusicLab from ClubCreate: Web, FREE
Audio Recorder Machine: Android, \$3.90	Audio Recorder Machine: Android, \$3.90
Melodyne 201-Advanced: Android, \$9.99	Audio Evolution Mobile: Android, \$6.99

**Notation-Based: Sheet Music in Coded Form**

Notation software provide "multiple modes of note entry, simplifying revision, and eliminating the need to copy individual parts by hand. It also provides an audio realization of the composition at any point in the compositional process" (Dammers, 2013, p. 205).

Music notation-based, tech-assisted compositions can range from simple, melodic explorations and chord copy/paste/arrange projects (Hickey, 2012) to grand masterworks performable by orchestras.

**Example Lesson:** Reharmonizing and Arranging

**Grade Level:** 9-12

**Learning Targets:**

- Use standard symbols to notate rhythm, pitch, and dynamics.
- Create and arrange short instrumental pieces.

**Skills Needed:**

- Familiarity with standard music notation.
- Understanding of basic 3 pitch chord structures.
- Understanding of concert pitch and instrument transpositions.

**Learning Outcomes:**

- Students will create a monophonic accompaniment for a pre-existing melody.
- Students will arrange their work to be performed on classroom instruments.
- Students will demonstrate an understanding of balance in their work through the use of dynamics.

**Process:**

- 1) Using a piece of classroom repertoire, the teachers will isolate the melody and display the way the composer/arranger built the basic harmonic structures present. Using the melody, teacher will direct students' attention towards the underlying chords.
- 2) Class will then re-harmonize the selected melody by building new chords on each pitch. The class will then perform the new re-harmonization in class and discuss the effect it had in comparison to the original work.
- 3) Students will isolate and select different melodies taken from classroom repertoire.
- 4) Teacher will demonstrate how to input the melodies into a notation program.
- 5) Students will input their melodies into the notation software.
- 6) Students will copy and paste their melodies into a new line. This melody copy will be used to reharmonize. Students will build chords for each pitch or each beat/measure of their melody.
- 7) Teacher will instruct students on how to use the notation program to create 3 independent instrumental lines and how to input the work.
- 8) Students will work on revising their reharmonizationsc to be as aurally pleasing as possible. They will arrange their work for a selected ensemble combination.
- 9) Students will develop and input specific dynamic directions for each instrument to demonstrate appropriate balance of melody and harmony lines.
- 10) Students will print their scores and independent musical parts. They will gather appropriate instruments and practice their arrangement for future in-class performance.

<b>Standard Notation and Notation-Like:</b>	
Notion: iOS, \$14.99 (upgraded version + \$29.99)	MuseScore: Mac/Windows/Linux, FREE
Noteflight: Web, FREE (upgradable subscription)	FinaleNotepad: Mac/Windows \$9.99
SimpleSolfege: iOS/Android, \$0.99	THIX Composer: iOS, FREE
Ensemble Compose: Android, FREE	Music Compositions: Android, FREE

**Drawing: A New Paradigm**

Anyone who can finger paint or draw can be a composer with these innovative applications:

**Example Lesson:** Creating a Melody and Countermelody

**Grade Level:** K-12

**Learning Targets:**

- Understand and describe melodic contour.
- Explore harmony through contrapuntal motion.
- Understand the use of line in both art and music.

**Skills Needed:**

- Manual dexterity or ability to use a stylus.
- A beginning understanding of harmony.

**Learning Outcomes:**

- Students will be able to describe the melodic contour of a simple melody taken from a well-know song.
- Students will create a melody and countermelody that displays contrapuntal motion.

**Process:**

- 1) After students have performed many melodies in class, teacher will direct students in mapping out the melodic contour of a melody from one of the class repertoire. The class will discuss the three ways that melodies can move (up, down, or stay the same) and note these movements on a self-created melody map.
- 2) Student will take their melody maps and trace the contour line into a musical drawing application.
- 3) Students will assess themselves on how accurately their contour lines match the known melody.
- 4) Teacher will model how to use the drawing app to create a countermelody using contrapuntal motion. The class will create a working definition for the term "contrapuntal motion" to use in their composition.
- 5) Students will create their own countermelodies and share them with classmates. Students will discuss the effectiveness of the varied distance/interval between the melody and countermelody lines.
- 6) Teacher will then introduce students to artwork that displays strong lines. Teacher will display a melody line composition created using the piece of artwork as an inspiration.
- 7) Students select a piece of artwork and compose an original melody contour inspired by a line taken from the artwork.
- 8) Students will then create a contrapuntal countermelody.
- 9) Student can informally share their works with classmates and teacher. A screenshot and audio recording of the work can be placed on a student or class' online portfolio along with a short writing description of the artwork that inspired their melody and the process they followed when creating their countermelody.

<b>Drawing:</b>	
iPaintTunes: iOS, \$0.99	Artikulator: iOS, \$2.99
SketchSynth3D Lite: iOS, FREE	SoundBrush: iOS, \$2.99
Morton Subotnick's Pitch Painter: iOS, \$2.99 (available FREE from <a href="http://www.creatingmusic.com">www.creatingmusic.com</a> , currently not working)	



**Other Composition-Friendly Applications:****Ensembles: Collaborative Creation:**

Apps that allow for communal and informal music making can be used to harness high levels of student creativity and musical skill. Such apps enable small student ensembles to perform covers of existing works, improvise, and compose in unique ways that allow “authentic expression... of the true creative ideas inside students” (Watson, 2011, p. 54) to come to the forefront as students are less bound by their technical abilities.

<b>Suggested Ensemble Playing Apps:</b>	
Rockmate: iOS, \$2.99	Trio+: iOS, \$0.99
TouchBand: iOS, FREE	JAM with Chrome: Chrome, FREE
Plink by Dianah Moe: Chrome, FREE	Garageband: iOS, \$4.99

**Novel Apps: New Visions/New Opportunities**

These app can truly allow students to think in sound, but will take creative planning by music educators to truly be useful for the purposes of musical learning in their specific classrooms.

<b>Suggested Novel Apps:</b>	
Nodebeat HD: Android, \$1.98; iOS, \$1.99	Aura 2 Flux: iOS, \$1.99
MelodyMusicMaker: iOS, \$0.99	Soundrop: iOS, FREE
Scape by Brian Eno: iOS, \$5.99	Bloom HD: iOS, \$3.99
UJAM: Chrome, FREE (convert voice to instrument)	

**Songwriting Tools: What's in Your Toolbox?**

These applications provide empowering tools for songwriters of any skill level:

<b>Suggested Songwriting Tools Apps:</b>	
Circle of Fun/CirclePad: iOS, FREE	Music Tool: iOS, FREE (upgraded version is \$3.99)
SongSynth: iOS, FREE (upgraded version is \$1.99)	Suggester: iOS, FREE
Maestro Touch: iOS, FREE (upgraded version is \$4.99)	Accompanist: iOS, \$1.99
Songwriter's Pad: Android, \$4.99; iOS, FREE (or \$14.99)	Jamstudios.com: Web, FREE (with optional subscription)
PianoChord.com: Web, FREE	

## Resources:

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